Gray Bat

Myotis grisescens

Guidelines for Landowners Using Conservation Practices

Missouri Department of Conservation

Common name ▪ Gray Bat
Scientific name ▪ *Myotis grisescens*
State status ▪ Endangered
Federal status ▪ Endangered

Ecology

Gray bats inhabit caves throughout the year. They are found primarily in the Ozark highlands, but also in central Missouri and the southern part of Northeastern Missouri. Most of Missouri's winter population hibernates in a few caves, all of which are in the southern part of the state. In the spring, usually in April and May, these bats migrate to over 100 other caves scattered throughout the Ozarks. Migration from summer caves to winter hibernacula is more drawn out, beginning in August and going through early November. Adults mate in the fall prior to hibernating. Hibernation lasts from October through April. Gray bats hibernate in deep, vertical caves that trap cold air. Bats have the ability to lower their metabolism during hibernation, thereby reducing the amount of energy they use. They enter hibernation with enough fat reserves to last until spring. Any disturbance to bats while they are in hibernation can arouse them and may result in death by starvation if fat reserves are depleted before insects are available in the spring.

During the summer, pregnant females form maternity colonies in warmer caves that have domed ceilings where the mothers can cluster together to keep their young warm. Females produce only one offspring per year, usually in June. Males and first-year females (which do not bear young) form bachelor colonies in separate caves or in cooler portions of maternity caves. Gray bats forage up to 12.4 miles from their summer roosts and feed on aquatic and terrestrial flying insects. They generally feed over water or in adjacent riparian vegetation.

Photo Credit: Missouri Department of Conservation

Reasons for Decline

Gray bats are very sensitive to disturbance, including the mere presence of humans with lights. Disturbance may result in bats moving to less favorable roosting places, or may cause them to abandon some caves entirely. In hibernacula, human disturbance causes the bats to use up vital fat reserves, their only source of energy throughout the winter. In maternity caves, pregnant females may abort unborn young or panicked mothers may drop offspring to their deaths if forced to flee from intruders. Severe or repeated disturbance may cause reproductive failure of an entire colony. Other threats include pesticides, cave commercialization, improper cave gating, and impoundment of waterways and watershed degradation. Removal of forest corridors between caves and rivers or reservoirs along foraging routes may also increase the risk of predation on bats. Use of insecticides may not only introduce poisons into the food chain, but also reduce the food supply for bats.

Recommendations

It is important to protect caves for roosting and riparian corridors areas for foraging. Stream channelization and building reservoirs that flood bat caves are extremely harmful.

Public education and elimination of trails leading to cave entrances are important. Educating the public about the benefits of bats and communicating with local spelunkers and researchers should help

reduce unintentional disturbance. Most people do not find caves if there is no trail leading to the entrance. Covering trails or preventing boat access will also reduce human disturbance.

Avoid human entry into gray bat caves during the season in which bats are present. This is dependent upon whether the cave is a maternity or hibernation cave. Maternity and bachelor caves should be closed to human entry April 1 through October 30. Winter hibernacula should be closed to human entry September 1 through April 30.

Contain all construction debris to prevent its accidental introduction into caves, sinkholes, or springs as a result of clean-up activities, run-off, flooding, wind, or other natural forces. Dispose of chemicals, toxic wastes, garbage, and wash water from trucks in areas designated for such wastes. These sites should be away from caves and sinkholes. Protect natural hydrology to avoid lowering of the water table. If temporary roadways must be built, ensure that roadways are of low gradient with sufficient roadbed and storm water runoff drains and outlets. Minimize sedimentation and chemical or nutrient-laden runoff into streams, sinkholes, caves, and abandoned wells by implementing and monitoring erosion and sediment controls for the duration of the project.

Re-establish and maintain forested riparian corridors at least 100-feet wide along streams and springs and around cave and sinkhole entrances to reduce erosion and capture nutrient rich runoff. Minimize erosion by revegetating disturbed areas as soon as possible.

Refer to Management Recommendations for Construction Projects Affecting Missouri Karst Habitat and Management Recommendations for Construction Projects Affecting Missouri Streams and Rivers.

Consider the balance between adverse and beneficial practices when determining the overall effect of a conservation practice.

Beneficial Practices

- As appropriate, cave entrances can be protected with gates or fencing, as well as posted notices. If gates are used at maternity caves, there must be a 3 feet space at the top of the gate to allow for free flight.
- Retain corridors of mature trees between bat caves and waterways to provide protection from avian predators between roosts and foraging areas.
- Protection and restoration of riparian corridors along streams.
- Nutrient and pest management on agricultural fields that results in reduced opportunities for runoff.
- Limit livestock access to streams.
- Practices that control erosion and prevent the delivery of sediment to aquatic systems will prove beneficial to this species.
- Livestock exclusion from sinkholes, springs, and karst areas.
- Filter strips and riparian corridors around sinkholes and springs.

Adverse Practices

- Deforestation activities, especially within a 100-foot buffer of the river or reservoir, to protect stream quality so the aquatic insect community remains healthy.
- Disposal of chemicals, toxic waste, garbage, and wash water from trucks in areas not designated for such waste. Designated sites should be away from caves and sinkholes.
- Installing a drain into a karst feature without a filter strip surrounding the point of entry.
- Unmanaged application of pesticides, animal waste or fertilizers that destroy or degrade habitats that support populations of this species.
- Stream channelization.
- Removing or degrading the riparian corridor near springs and along streams.
- Uncontrolled livestock access to forested riparian corridors and streams.
- Building roadways, paths etc., to cave entrances which could result in increased human activity at the cave entrance and potential impacts to cave ecosystems.
- Access to maternity and bachelor caves between April 1 and October 30 and winter hibernacula caves between September 1 and April 30.
- Poor smoke management when conducting a prescribed burn in areas with caves.

Information Contacts

Missouri Department of Conservation
Policy Coordination Section
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2901 W. Truman Blvd
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Telephone: 573-751-4115
http://www.mdc.mo.gov/nathis/endangered/

U.S. Fish and Wildlife Service
Ecological Services Field Office
101 Park DeVille Dr., Suite A
Columbia, MO 65203
Telephone: 573-234-2132
http://www.fws.gov/midwest/partners/missouri.html

Legal

The Missouri Department of Conservation prepared these guidelines for conservation practices with assistance from other state agencies, contractors, and others to provide guidance to those people who wish to voluntarily act to protect wildlife and habitat.

Compliance with these management guidelines is not required by the Missouri wildlife and forestry law or by any regulation of the Missouri Conservation Commission. Other federal, state or local laws may affect construction practices.

"State Endangered Status" is determined by the Missouri Conservation Commission under constitutional authority, and specific requirements for impacts to such species are expressed in the Missouri Wildlife Code, rule 3 CSR 10-4.111.

Species listed under the Federal Endangered Species Act must be considered in projects receiving federal funds or requiring permits under the Clean Water Act, with compliance issues resolved in consultation with the U.S. Fish and Wildlife Service.